ANNUAL ADMINISTRATIVE REPORT (FY2001) AND WORK PLAN (FY2002) FOR INVENTORIES AND VITAL SIGNS MONITORING

NATIONAL CAPITAL NETWORK

National Capital Network Approval Signatures

John Howard, Superintendent, Antietam National Battlefield Chair, National Capital Network Board of Directors	Date
Ellen van Snik Gray, Natural Resources and Science Inventory and Monitoring Coordinator, National Capital Region	Date
Marcus Koenen, Natural Resources and Science Monitoring Coordinator, National Capital Network	Date
Jim Sherald, Natural Resources and Science Chief, Natural Resources and Science	Date

I. Overview and Objectives

The National Capital Network (NCN) includes eleven national parks with significant natural resources in the District of Columbia, Virginia, Maryland, and West Virginia. In FY01, several biological inventories were initiated, including inventories for deer, mammals, birds, reptiles, and amphibians. The network was one of seven networks that received __ start up funds for initiating the monitoring program from the Servicewide I&M program. Accordingly, priorities for FY01 included the hiring of key personnel to initiate this work plan, establishing a Board of Directors and a Science Advisory Committee, and summarizing data for vital signs scoping sessions. In addition, the Network received __ from the Water Resource Division to initiate a Water Quality Monitoring Plan and a term hydrologist was hired.

In FY02, biological inventories of amphibians, reptiles, small mammals, and birds will continue. Two new inventories for fish and vascular plants will be initiated. Monitoring staff will continue to work with the Science Advisory Committee, summarize data, and plan for vital signs scoping sessions.

The Water Quality Monitoring Plan will be developed in house by the two hydrologists at the Center for Urban Ecology over a period of one to two years. The plan will be site specific for NCR and contain clearly stated objectives, a rigorous statistical design, monitoring protocols, a QA/QC plan and implementation plan, data management, and budget. The plan will be incorporated into the network's overall Vital Signs Monitoring Plan.

Objectives for Biological Inventories

1. Compile and evaluate existing data for each park into NPS databases.
2. Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Objectives for Vital Signs Monitoring

3. Hire key personnel to implement the network monitoring program.
4. Establish Board of Directors and Science Advisory Committee.
5. Summarize existing data and understanding and prepare for vital signs scoping workshops.
6. Complete vegetation mapping for the network.
7. Develop a network water quality monitoring plan.

II. Accomplishments (FY2001) and Scheduled Activities (FY2002)

A. Biological Inventories

Objective 1 – Compile and evaluate existing data for each park into NPS databases (all parks).

Task 1.1 – Compile and evaluate existing data on vertebrates and vascular plants and enter them in a consistent format into NPSpecies, NPBib, Database Template and the Dataset Catalog.

- FY 2001 Accomplishments: (1) 1,178 entries were made into NPSpecies. (2) The Database Template was modified for the bird inventory and populated with data from six parks (see task 1.4).

- Scheduled FY 2002 Activities and Products: (1) Locate additional inventory related reference material including observations, vouchers, and literature. (2) Coordinate data entry with parks, contractors, and WASO. (3) Develop and implement a Data Management Plan to ensure quality data content in all I&M databases.

Task 1.2 – Compile existing GIS themes and modify them to be consistent with the GIS Theme Manager.

- FY 2001 Accomplishments: (1) The NPS GIS Theme Manager for ANTI was populated with existing GIS themes by the regional GIS Specialist.
- Scheduled FY 2002 Activities and Products: (1) The NPS GIS Theme Manager will continue to be populated with existing GIS themes by the regional GIS Specialist. Each theme will be evaluated to determine if it is compatible with the Theme Manager and if FGDC-compliant metadata exist.

Task 1.3 – Convert existing hard copy maps to digital GIS format.

- FY 2001 Accomplishments: (1) A network Data Manager was hired.
- Scheduled FY2002 Activities and Products: (1) The Data Manager will evaluate existing hard copy maps for their utility and feasibility to be incorporated into GIS.

Task 1.4 – Adapt Database Template to National Capital Network I & M projects.

- FY 2001 Accomplishments: (1) A Database Template was created for the NPS Bird Inventory. (2) The Database Template was populated with data collected by volunteers surveying six parks including Antietam National Battlefield, Catoctin Mountain Park, Harpers Ferry National Historical Park, Manassas National Battlefield, Prince William Forest Park, and Wolf Trap Farm Park.
- Scheduled FY2002 Activities and Products: (1) The Database Template will be modified to integrate small mammal data, deer data, amphibian, and reptile data. In addition, the Database will be integrated with GIS. (2) New data will be entered as it becomes available.

Objective 2 – Complete the documentation of 90% of vertebrate and vascular plant species in the parks through targeted field investigations.

Task 2.1 – Mammal surveys

Parks involved (small mammals): ANTI, CATO, CHOH, GWMP, HAFE, NACE, ROCR, WOTR
Parks involved (medium/large mammals): ANTI, CHOH, GWMP, HAFE, ROCR

- FY 2001 Accomplishments: (1) Dr. McShea (Smithsonian Institution) and his team visited the parks, determined sampling sites, and obtained relevant GIS themes in the winter of 2000. (2) Small mammal trapping occurred from April to October of 2001 at ANTI, CATO, CHOH, and HAFE. Field sampling is complete at ANTI and HAFE. (3) Infra-red trip cameras were set up at ANTI, CHOH, and HAFE to document medium to large mammals for one week in the winter and summer months.
- Scheduled FY 2002 Activities and Products: (1) An annual report is due in November 2001. (2) Small mammal trapping and medium-large mammal documentation will continue at CATO, CHOH, GWMP, NACE, ROCR, and WOTR in FY 2002.

Task 2.2 – Distance sampling for deer density estimation

Parks involved: ANTI, CATO, CHOH, GWMP, MANA, MONO, NACE, PRWI, ROCR

- FY 2001 Accomplishments: (1) Dr. Underwood (USGS) and his team conducted a distance sampling training session for NCN natural resource managers and I&M staff. (2) Distance sampling was conducted at each park between October 2000 and July 2001.

- Scheduled FY 2002 Activities and Products: (1) A final report is expected in November 2001. (2) The regional widlife biologist, Biological Inventories Coordinator, and NCN natural resource managers will repeat distance sampling at each park between October 2001 and July 2002.

Task 2.3 – Inventory of breeding, wintering, and migrating bird species
Parks involved: ANTI, CATO, HAFE, MANA, PRWI, WOTR

- FY 2001 Accomplishments: (1) Bird Inventory protocols were developed including data sheets, instruction manuals, and maps. (2) Volunteer participants were identified by promoting NPS Bird Inventory with local bird clubs through presentations, newsletters, and a web page. (3) Site visits to each park with volunteers and Resource Managers were coordinated. (4) Data management was centralized (See Task 1.4).
- Scheduled FY 2002 Activities and Products: (1) Volunteers will continue to inventory birds at each park. (2) Data will be analyzed to determine if 90% documentation levels have been reached at each park. (3) Protocols will be reviewed and revised if needed.

Task 2.4 – Inventory of reptiles and amphibians
Parks involved: CATO, CHOH, GWMP, HAFE, MANA, MONO, ROCR, WOTR.

- FY 2001 Accomplishments: (1) A request for proposals was sent out and a cooperative agreement was established with Dr. Thomas Pauley and Dr. Mark Watson with the University of Pittsburgh to conduct reptile and amphibian inventories in selected NCN parks. Funding allocation: NA
- Scheduled FY 2002 Activities and Products: (1) The investigators will obtain relevant GIS themes, select study sites, and initiate field work. (2) Sampling will occur in autumn (September-October), early spring (March-April), spring (May-June), and summer (July-August) of 2001-2002. (3) A variety of sampling techniques will be used, including terrestrial ground searches during the day and night, road surveys after rainfall events, dip netting and funnel trapping in aquatic habitats, toad and frog calling using the North American Amphibian Monitoring Program protocol, and turtle trapping. (4) An annual report is due in November 2002.

Task 2.5 – Inventory of fishes (new project for FY 2002)
Parks involved: ANTI, CHOH, GWMP, HAFE, MANA, MONO, WOTR.

- Scheduled FY 2002 Activities and Products: (1) A request for proposals will be sent out and a cooperative agreement established to conduct fish inventories in selected NCN parks.

Task 2.6 – Inventory of vascular plants (new project for FY 2002)
Parks involved: ANTI, CATO, CHOH, GWMP, HAFE, MANA, MONO, NACE, PRWI, ROCR, WOTR.

- Scheduled FY 2002 Activities and Products: (1) A request for proposals will be sent out and cooperative agreement(s) established to conduct vascular plant inventories in all NCN parks.

B. Vital Signs Monitoring

Objective 3 – Hire key personnel to implement the network monitoring program.

- FY2001 Accomplishments: (1) A Network Monitoring Coordinator, Data Manager, and Biological Science Technician have been hired and are stationed at the Center for Urban Ecology (CUE) with the National Capital Region's Natural Resources and Science staff. The I & M staff are supervised by the National Capital Region I & M Coordinator. A term Hydrologist has been hired to help design and implement a Network Water Quality Monitoring Plan in coordination with the I & M program. The position is supervised by the Regional Hydrologist and stationed at CUE.

Objective 4 – Establish Board of Directors and Science Advisory Committee.

Task 4.1 - Form a Board of Directors (BOD).

- FY2001 Accomplishments: (1) A BOD was established to provide overall guidance and oversight to the I & M program. (See Staffing for complete list of participants). (2) A charter outlining the operating procedures of the Board of Directors has been developed by I & M staff and signed by members representing each of the 11 parks in the National Capital Network. (3) A BOD meeting was held in September 2001 to review the scope of work for FY01 and planned activities for FY02. The BOD approved the network's Science Advisory Committee (see task 4.2).
- Scheduled FY 2002 Activities and Products: (1) A BOD meeting will be held in Spring 2002 to review projects to date and evaluate activities planned for the remainder of FY 02.

Task 4.2 – Form a Science Advisory Committee (SAC).

- FY2001 Accomplishments: (1) A SAC was formed to provide technical recommendations to the BOD and assist with data gathering and scoping sessions. The SAC is composed of resource managers, scientists familiar with the parks in the region, and I & M staff. (See Staffing for complete list of participants).
- Scheduled FY 2002 Activities and Products: (1) SAC meetings will be held quarterly to prepare material needed for scoping sessions.

Objective 5 – Summarize existing data and understanding and prepare for vital signs scoping workshops.

Task 5.1 - Review Resource Management Plans.

- FY2001 Accomplishments: (1) The Monitoring Coordinator and Biological Science Technician have reviewed Resource Management Plans for 5 parks (ANTI, CATO, CHOH, MONO, and WOTR).
- Scheduled FY 2002 Activities and Products: (1) RMPs for remaining parks in the region will be reviewed by the Monitoring Coordinator and Biological Science Technician.

Task 5.2 - Develop Park Questionnaires.

- FY2001 Accomplishments: (1) The I & M Team has met with superintendents and resource managers at four parks (ANTI, CATO, MONO, and WOTR) to assess monitoring priorities, summarize key park resources, and evaluate current monitoring programs. See Appendix 1 for an example questionnaire from ANTI.
- Scheduled FY 2002 Activities and Products: (1) Develop Park Questionnaires and interview superintendents and resource managers at remaining parks in the region.

Task 5.3 - Summarize Regional Monitoring Programs.

- FY2001 Accomplishments: (1) The Monitoring Coordinator and Biological Science Technician have summarized many current and historical monitoring programs in the region including fire effects, threatened and endangered species, water quality, air quality, physical processes, and other resources. In addition, monitoring conducted by neighboring agencies, partners, and parks was summarized for the region to provide essential background information for future scoping sessions.
- Scheduled FY 2002 Activities and Products: (1) Continue to investigate regional monitoring programs. It is anticipated that completing this task and compiling the information into a report will take one year.

Objective 6 – Complete vegetation mapping for the network. Vegetation maps are a critical data layer needed for designing monitoring programs. Accordingly, we are contributing to a regionwide vegetation mapping project.
Parks involved: ANTI, CATO, CHOH, GWMP, HAFE, MANA, MONO, NACE, PRWI, ROCR, WOTR

Task 6.1 – Conduct aerial photography of the region.

- FY 2001 Accomplishments: (1) A bid for fall infrared aerial photography with airborne GPS and IMU was submitted along with the Northeast Region. (2) A contract was awarded to Kucera International for the park photography at 1:6,000 including a half-mile buffer. Funding allocation: NA (3) A cooperative agreement was established with Dr. Hugh Devine of North Carolina State University to conduct orthorectification, develop digital mosaics from our photography, and provide FGDC-compliant metadata. Funding allocation: NA
- Scheduled FY 2002 Activities and Products: (1) Aerial photography was scheduled to occur during leaf senescence (October 2001). However, due to the September 11, 2001 terrorist attacks, the restricted air space surrounding the District of Columbia has been expanded and we could not obtain a waiver to allow the vendor to conduct our aerial photography. The vendor has agreed to reschedule for October 2002. (2) North Carolina State University will provide the digital mosaic products and associated metadata in December 2003.

Task 6.2 – Conduct vegetation mapping of the NCN parks using the US National Vegetation Classification (New project for FY 2002).

- Scheduled FY 2002 Activities and Products: (1) A proposal to classify vegetation and map NCN parks involving the Association for Biodiversity Information (Lesley Sneddon), Virginia Natural Heritage, and the NPS will be developed and submitted to the Vegetation Mapping Program. The proposal will include a Rapid Assessment method, a plotless technique to incorporate existing classification and reduce the quantity of data needed in initial field assessments. The proposal will also include a cost comparison of the Rapid Assessment technique to the 'standard' method using plots.

Objective 7 – Develop a network water quality monitoring plan. A Water Quality Monitoring Study Plan was submitted and approved by the Water Resources Division to allocate funding for NA during this fiscal year. A term hydrologist has since been hired. The hydrologist will assist in the planning, design and implementation of the water quality monitoring plan based upon elements from the Federal Clean Water Act and the state's Water Quality Management Plan in which the park is located. This will be conducted in coordination with the I & M Program.

Specific tasks include:
1. Specify an approach for identifying and prioritizing short and long-term water quality monitoring needs for parks in the NCN;
2. Identify water resource inventory data gaps;
3. Develop monitoring protocol and QA/QC plan according to servicewide standards;
4. Define goals for project planning, funding, logistics, and implementation; and
5. Determine data management needs and protocols following servicewide water quality monitoring standards (e.g. EPA-STORET legacy system).

III. Staffing

Inventory and Monitoring Staff (CUE)

Ellen Gray, National Capital Region I&M Coordinator
Marcus Koenen, Monitoring Coordinator
Christina Wright, Data Manager
John Sinclair, Biological Inventories Coordinator
Mikaila Milton, Biological Science Technician
Doug Curtis, Hydrologist
Ray Chaput, Hydrologist (term appointment to develop water resource plan)

Board of Directors

John Howard - Chair (Superintendent - ANTI)
Don Campbell (Superintendent - HAFE)
Adrienne Coleman (Superintendent - ROCR)
Karen Cucurullo (Superintendent - MANA)
Ellen Gray (I & M Coordinator - NRS)
Robert Hickman (Superintendent - PRWI)
Diane Ingram (Resource Manager - CHOH)
Chris Jones (Resource Manager - WOTR)
Marcus Koenen (Monitoring Coordinator - NRS)
Dottie Marshall (Assistant Superintendent - GWMP)
Jim Sherald (Chief - NRS)
Karen Taylor-Goodrich (Superintendent - NACE)
Susan Trail (Superintendent - MONO)
Jim Voigt (Resource Manager - CATO)

Science Advisory Committee

Ellen Gray, PhD - Chair (I & M Coordinator)
Scott Bates (Wildlife Biologist - NRS)
Pat Bradley, PhD. (EPA/Mid-Atlantic Integrated Assessment)
Doug Curtis (Hydrologist - NRS)
Ray Chaput, PhD (Hydrologist – NRS)
Bryan Gorsira (Resource Manager - MANA)
Dianne Ingram (Resource Manager - CHOH)
Lisa Jameson (Exotic Plant Management Team Coordinator – NRS)
Chris Jones (Resource Manager – WOTR)
Melissa Kangas (Resource Manager – GWMP)
Marcus Koenen (Monitoring Coordinator – NRS)
Tom Kopcyk (Resource Manager – MONO)
Becky Lancosky (Resource Manager - CATO)
Jennifer Lee (Resource Manager – PRWI)
Mikaila Milton (Biotech – NRS)

Dale Nisbet (Resource Manager – HAFE)
Alan F. O'Connel, PhD. (USGS – Patuxent Wildlife Research Cntr.)
Diane Pavek, PhD (Botanist – NRS)
Sue Salmons (Resource Manager – ROCR)
John Sinclair (Inventories Coordinator – NRS)
Jim Sherald, PhD (Chief, NRS)
Craig Snyder, PhD. (Ecologist - Leetown Science Center - USGS)
Jil Swearingen (Entomologist/IPM Coordinator - NRS)
Brent Steury (Resource Manager – NACE)
Pat Toops (Deputy Chief, NRS)
Jim Voigt (Resource Manager – CATO)
Ed Wenschhof (Resource Manager – ANTI)
Christina Wright, PhD (Data Manager – NRS)

Science Advisory Committee – Ad Hoc Members

Doug Samson, PhD. (The Nature Conservancy – DC/Marlyand Chapter)
Steve Seagle, PhD. (Center for Environmental Science, Appalachian Laboratory)

Contractors/Cooperators

Dr. William McShea, Smithsonian Institution – Mammal Inventory
Dr. George Middendorf, Howard University – Amphibian/Reptile Inventory
Dr. Joe Mitchell, University of Richmond – Amphibian/Reptile Inventory
Dr. Thomas Pauley, University of Pittsburgh, Bradford, PA – Amphibian/Reptile Inventory
Dr. Brian Underwood, USGS – Deer Population Study
Dr. Mark B. Watson, University of Pittsburgh, Bradford, PA – Amphibian/Reptile Inventory

IV. Public Interest Highlights

- *Volunteers play key role in identifying birds in the National Capital Region's national parks.*--Over 20 volunteers have joined NPS efforts to inventory bird populations at six parks including Antietam National Battlefield, Catoctin Mountain Park, Harpers Ferry National Historical Park, Manassas National Battlefield, and Wolf Trap Farm Park. These skilled birders have been visiting the parks each month since January 2001 to identify bird species. Collectively, the volunteers have logged more than 680 hours and identified over 150 species including many that have never been recorded in the parks previously. They have located wintering and migrating species and made special efforts to confirm nesting species by looking for unique behavioral cues such as birds carrying nesting material or adults feeding their fledglings. These data will be useful to park management by identifying areas important to species of concern such as the Wood Thrush, Scarlet Tanager, and Cerulean Warbler.

V. Reports, Publications, and Presentations

Gray, E. S. 2001. Status of the Inventory and Monitoring program of the National Capital Region. Presentation to the National Park Service Inventory and Monitoring Advisory Committee, Shepherdstown, West Virginia.

Koenen, M. K. 2001. The National Park Service Volunteer Bird Inventory – An Introduction. Presentation to the Frederick Bird Club, Frederick, Maryland.

Koenen, M. K. 2001. Inventories and Monitoring at the National Park Service: a long-term approach. Presentation to the Chesapeake Bay Program: Federal Action Committee. Fort Dupont Park, Maryland.

Koenen, M. K. 2001. Inventories and Monitoring at the National Park Service: a long-term approach. Presentation to the Virginia Chapter of The Wildlife Society. Mountain Lake Biological Station, Blacksburg, Virginia.

VI. Status of Park Vital Signs Monitoring

	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics
Planning and Design							
# parks monitoring w/ NRC funding	11	11	11	11	11	11	11
# parks monitoring w/ other funding	1	3	1	1	4	11	0
Protocols Implemented							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	1	1	4	11	0
Analysis/Synthesis Available							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	1	1	4	11	0

VII. Budget

NA

Appendix 1. Sample Questionnaire for ANTI, including questions for superintendents (A), natural resource managers (B), and summary of existing monitoring at the park (C).

A. I & M Questions for Superintendents:

What are the park's most valuable resources?

What are threats or stresses to the park's resources?
(Any specific areas?)

What are your resource management needs?

What are your monitoring needs?
(natural resource issues, public health issues; visibility issues, cultural resources, etc.)

What should we be monitoring?
(How can we help you complete your mission)

B. General Questions for Natural Resource Managers – Key Resources, Management Issues, and Threats to Antietam National Battlefield

What are the major ecological systems/habitats/communities/species found in ANTI?

What are the most important resources in ANTI and in the region?

Are there any regionally important conservation targets (species, groups of species, specific habitats, etc) that are not captured entirely by the park? (Examples include migratory birds that may only use the park during a certain time or spawning fish that spend most of their life cycle outside of the park)

Are there species that have special management requirements? Eg. Loggerhead Shrike.

What are the main management issues in ANTI?

Which conservation targets (eg. Species, communities) could represent the overall biodiversity of the park?

Do these conservation targets have viable populations?

Which are the most threatened natural resources in the park?

What are threats to these resources (eg, excessive deer herbivory, sedimentation, etc)?

What are the sources of the threats (deer overpopulation, surrounding construction and development, etc)?

What are potential strategies to abate the threats?

What type of conservation and monitoring activities are your neighbors conducting?

(Conservation Reserve Enhancement Program [USDA], easements, Wildlife Habitat Incentives Program [USDA], Wetland Reserve Program [USDA], Maryland Department of the Environment [DNR, Wildlife and Heritage, GAP Analysis], Frederick County, etc.)?

Are you able to access information about neighboring conservation and monitoring projects?

What additional monitoring needs do you have?

What services can the NCR I & M program provide?

C. I & M Questionnaire for Antietam National Battlefield – Existing Monitoring Programs

Amphibian Monitoring

What is the status of the Amphibian and Reptile Inventory at ANTI? Have you received a final report? Will you enter this into NPSpecies or is this something that we can assist with?

Bird Monitoring

Bluebird: monitoring began in 1979 and is continuing. Is this continuing? Who is doing this? Have they turned in any reports?

The loggerhead shrike: is a state endangered bird with limited sightings and documentation. The MD HBCP staff monitors nesting and population status. The park is cooperating with the MD HBCP on habitat improvement and preservation projects in certain park pastures that are already ideal habitat. (1997 update). Is this continuing? Is it a high priority for you? What of other grassland birds?

Is the Appalachian Bewick's wren was listed as a priority in the 1995 RMP – is this still a priority? How are you monitoring for this species?

Fish Monitoring

MD Biological Stream Survey (MBSS): They look at benthic and a variety of other characteristics in MD streams. Is there any MBSS work by MD DNR in the park? Do you have access to this data? Do you use it?

Mammal Monitoring

Distance Sampling: White tail deer Distance sampling was implemented by NPS in all parks except HAFE, several NACE units and WOTR. First year (2000) was surveyd by Brian Underwood, Cornell; follow up is coordinated by Scott Bates. Will you participate in this? How will you manage and maintain the data for this project?

The 1995 RMP identified the need for exclosures and designation of control areas to monitor changes in vegetation and impacts on crop yields. Have these been implemented? Is anyone else in the region monitoring deer (eg deer check stations)?

Woodchuck: This has been identified as a species of management concern. How is it being monitored?

Are there other mammal monitoring events? Eg. Winterkill survey.

Reptile Monitoring

Are any reptile species being monitored?

Wildlife Observations

Wildlife observations have been maintained from 1982 to present. How complete is the data? What are your plans for entering it into NPSpecies?

Vascular Plants

Exotic plants: Are you doing any work in addition to that of the EPMT?

Research: Alison Dibble of USDA Forest Service has a research project that has several components: 1. Developing a model to predict where invasive species will go; 2. Monitoring starch content of roots to determine where and when to burn; 3. Also looking at fuel loads to evaluate changing fire regimes due to influx of invasive species. She has set up plots. How many are in the park? What is the time frame for this project, will it fulfill inventory of exotic plants?

Fire Plan: What is the status of the plan? What will it cover? What other information do you need to complete it?

Exotic plant control: In 1985 several test areas were established to experiment with the control of multiflora rose, Japanese honeysuckle, and tree of heaven. Work at these sites is inconclusive. In 1987, control continued on tree of heaven stands (cutting and grubbing) and a series of honeysuckle study plots were established. Are the plots still being monitored?

Monitoring: In the 1995 RMP, the park proposes (through seasonal rangers, SCA, interns, and/or research institutions) to establish vegetation monitoring plots or transects. Have these been implemented? What are you monitoring and how are you doing it?

Historic Species: According to the 1995 RMP, the park will locate, observe, identify, and record information on historic, old, or specimen trees towards a goal of preserving native genotypes. The RMP also states that the park should begin a collection program and begin growing native tree seedlings for replanting specimen trees or supporting the restoration of historically wooded areas. Are these programs in place?

An NRPP grant received in FY 1993 was used to complete tree inventories of five landscaped/memorial areas within the Battlefield. The NRPP funds were used to support a SCA resource assistant and a college intern who completed a re-identification, re-tagging and measurement of the trees within these areas. Databases containing this information were developed or updated. Is there a summary report associated with this project?

Wildlflowers: A wildflower inventory of the Snavely's Ford Natural Area was completed throughout 1994 and 1995. Is there a summary report associated with this project?

Butternut: Tree planting of Butternut. How are you monitoring success of the tree planting?

Burnside Sycamore: The Burnside Sycamore has been identified as a species of concern (1995 RMP). Seeds have been collected and propagated through American Forest's Famous and Historic Trees Program. What are the goals of this program? What is the project's status.

Agricultural Crops: Agricultural crops and weed crops associated with farming have also been recognized and documented to some extent. (1995 RMP) What are the goals of this program? What is the project's status.

Invertebrate Monitoring

Mosquito (West Nile Virus) monitoring: Does this occur in the park?

Gypsy Moth monitoring: USFS overflights completed annually by USFS in the region. Do these occur at ANTI? The 1995 RMP also notes that the park staff monitored GM populations 1982-1988 – do you still monitor? How are you tracking the data?

Crop Pests: Monitoring by the Washington County Cooperative Extension Service from 1984 to 1995 and are ongoing. Do they monitor on NPS lands? How are they doing the monitoring?

Exotics: The 1988 RMP recommends monitoring for the Asiatic clam (*Corbicula manilensis Philippi*) and if found, reducing or eliminating the population. Is this being done? What methods are you using? Do you have any management activities in place?

Misc Pest Issues: Spider mites on Norway spruce and eastern hemlocks were identified in 1995 as well as boxwood leaf miners; hemlock woolly adelgid, and dogwood anthracnose are current problems throughout the region. Are they being monitorred.

In 1996 park staff began collecting insects incidental to other activities. Have these been tracked?

T & E Species (& Species of Concern)

Diane Pavek recently summarized federally-listed T & E species for the region – there were no species listed for ANTI. Is this list complete?

Previous RMPs identify a number of species of concern including: --white trout-lily
--goldenseal, two species of freshwater mussels (the green floater, *Lasmigona subviridus* and brook floater, *Alasmidonta varicosa)*, Loggerhead shrike, (*Lanius ludovicianus migrans)*, Bewick's wren, (*hyromanes bewickii altus)*, Eastern bluebird (*Sialia sialis*), and Barn owl (*Tyto alba*). Are they still priority species for you? How are they being monitored?

MD Heritage has surveyed for rare species in the past. Have you contracted them to do the work in the past? Are they conducting surveys in the future?

The 1995 RMP states that the park GIS will be used to record data relating to the presence and distribution of rare, threatened, and endangered flora. Has this happened?

Data Analysis and Management

How are you managing data from existing park monitoring programs?

How are you using monitoring information? (Data analysis? Management activities?)

Aerial Photos

A complete collection of aerial photos exists for each decade from the 1930's thru the 1980's. This collection includes black & white, color, and IR photos. The RMP noted that aerial photos from the 90's are needed to update the data and allow for analysis of impacts. Do you still need them?

Air Quality Monitoring

The park is a class 2 airshed. (NCR Status Report 1999).

Air Quality: The 1995 RMP recommends that the park will monitor internal and external threats to air quality in accordance with established policies and guidelines. The RMP further states that air monitoring and evaluation may be completed through coordination with nearby monitoring stations in Maryland, Pennsylvania, Virginia, and West Virginia. What is the status of this project?

Ozone: An ozone monitoring program was completed during the summer, of 84, 85, and 86. The program was organized by the Air Quality Division, WASO and monitored ozone damage on milkweed plants. Do you have this data? Have you been able to use it for management activities? Do you see a further need to monitor ozone at the park?

Monitoring Pollution Sources: No air quality monitoring programs are currently in place at Antietam. However, an air quality assessment and identification of nearby air pollution sources was conducted during the development of the GMP. Are there regional efforts to monitor the pollution sources?

Acid precipitation: is monitored at Gettysburg National Military Park as part of a long-term study. Is ANTI part of that project?

Fire Monitoring

As of 1984 the park established a fire weather station. Is this on-going? What is happening to the data? Is it useful? Why are you monitoring fire conditions? Is fire a significant threat?

Geological & Soil Monitoring

Have you identified any monitoring needs for soils or geology.

Metereological Monitoring

Detailed weather information, including temperature and rainfall averages by month and year since 1941 is available at park headquarters. How does this data get managed and used?

The 1995 RMP recommends that contact be made to NOAA-National Weather Service regarding the establishment of a weather monitoring station at Antietam and participation in the national cooperative observers network. If this is not possible, some weather equipment should be acquired to take simple measurements to meet the minimally recommended data standards for inventory and monitoring. Data of interest includes precipitation amount, snowfall, duration of precipitation, high and low daily temperatures, weather events (e.g., fog, ice) and wind speed. What is the status of this?

Pesticide Use

A database was identified for storing pesticide use data from 1976 to present. Is this current and up to date? How is the information used?

Photo monitoring

In 1985, the staff began bi-monthly photomonitoring of park scenes. What are the objectives of the photos? How are the results analyzed, stored, etc?

Soundscapes

Are noise factors an issue that may need monitoring?

Visitors

Are visitor impacts being monitored in the park?

Water Quality Monitoring

In 1979 a draft water resources management plan was written for Antietam but was never finalized. That plan contains rudimentary baseline data and calls for cleanup efforts, monitoring biological conditions, flood hazard response plan, and monitoring visitor use. The 1988 RMP recommended the completion of the park's water resources management plan and implementation of the proposals contained therein. Has this happened?

In 1979, the park initiated a monthly groundwater testing program of park wells. Is this ongoing? How do you maintain the data now?

Surface Water Quality: In 1985, the park initiated a monthly surface water quality testing program for streams within the following parameters: temperature, pH, electrical conductance, dissolved oxygen, nitrate, ammonium, chloride, phosphate, alkalinity, and turbidity. As of 1995 this program had been discontinued due to a lack of funding, however the RMP (1995) calls for a reinitiation of this program. Has this happened?
Were there any final reports describing the location of monitoring stations, methods, etc?

A junior college survey of macroinvertebrates of Antietam Creek was completed in 1981. Can we get a copy of this?

The 1997 RMP Update notes that wetlands and floodplains within the Antietam National Battlefield have been identified and delineated, though no monitoring program is currently in effect to detect changes or threats to these areas. Is this still a priority?

NCR Status Report 1999 mentions Rapid Bioassesment EPA project began in 1998. Where did this project occur? Are there final reports…is it ongoing? What is the status?

As of 1995, monitoring was done by the Maryland Department of the Environment for coliform, pH, and several other parameters on a monthly basis. Additional monitoring was being conducted by the MD Department of the Environment at one location in Antietam Creek. Is this ongoing? Do you have any of the original data?

Also, the United States Geological Survey was maintaining a stream depth gaging station near Burnside Bridge from which flow could be determined. Is this ongoing?

The 1995 RMP called for 1) Re-establishing monitoring points along the Antietam Creek tributaries located within the park and along the Antietam Creek itself to monitor and record biological, chemical, and physical parameters 2) renew the park's water databases to record measurements and track fluctuations in readings 3) complete groundwater sampling of park wells 4) complete simple aquatic organism surveys of park waters 5) environmental responsibility and aquatic resources protection 6) revise park water monitoring program documents. Are these still your priorities?

Wetlands

Wetlands and floodplains within the Antietam National Battlefield have been identified and delineated, though no monitoring program is currently in effect to detect changes or threats to these areas. Should these wetlands be monitored?

Additional Requested resources:

Historical Data

Specimen Collections: According to the 1988 RMP. An initial effort has been made to establish a specimen collection; an entomological cabinet and an herbarium cabinet have been acquired. To what extent have they been used?

Also, the park museum collection includes 1780 objects. The majority are stored at the MARS facility. Are any of these Natural Resource specimens? How do you track them?

Summary

The 1988 RMP recommends developing a full systematic inventory and monitoring program for the park. This program will monitor water quality, small mammal populations, avian populations, insect and disease problems, and aesthetic conditions (visual resource inventory). Records of floods, storm damage and adverse visitor use will also be maintained. This can be

achieved through in-house and outside agency efforts and will include library research, collection of related maps and reports prepared by other agencies as well as field work (sampling, photo-recording etc.). What are your current priorities? What are your top five monitoring needs?

References – Can we get these from you?

Maryland Department of Natural Resources, Heritage & Biodiversity Conservation Programs. 1997. Antietam National Battlefield, Natural Areas Inventory for Rare, Threatened and Endangered Plants and Selected Animals with Management Recommendations.

In 1995, the Water Resources Division of the National Park Service published "Baseline Water Quality Data, Inventory and Analysis, Antietam National Battlefield." (NPS/NRWRD/NRTR-95/71, December 1995)